# House Committee on Transportation and Infrastructure


## Subcommittee on Aviation

Hearing on

## Commercial Space Transportation

December 2, 2009

Testimony by Mr. James Testwuide

Representing the Wisconsin Aerospace Authority

Wisconsin Spaceport in Sheboygan, WI

Rep. Jerry Costello, Chairman

Rep. Tom Petri, Ranking Member

# FAA ROLE IN COMMERCIAL SPACE

- **FAA provides confidence to the community that the industry is run in a safe and sound manner**
- **FAA/AST has successfully executed it's mission "to ensure protection of the public, property, and the national security and foreign policy interests of the United States during commercial launch or reentry activities, and to encourage, facilitate, and promote U.S. commercial space transportation"**
- **FAA integrates years of experience in aviation and airport operations into it's commercial space flight oversight**
- **FAA provides support aiding in the orderly expansion of the commercial space flight industry**
- **The commercial space community must be self constraining with expert and experiential based mentoring from the FAA and others providing guidelines for licensing and achieving safety and environmental goals.**

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# USA needs to maintain its competitive edge and develop an economically sustainable commercial space model

- Industry ,state governments, and FAA need to identify and mentor the licensing of operators
- Spaceport assets need to be identified and implementation plans and viability studies need to be completed
- Spaceport and vehicle developers/operators need to continue the current collaborative environment among themselves and the FAA
- Combining these developments with public education, tourism, and high technology interactive experiences will motivate interest in science, technology, engineering and math careers

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# Nurturing of spaceports assets provides efficient growth

- Efficiencies of a multi use facility can be utilized
  - Horizontal take off of space “planes “ can coexist at conventional airports with the proper attributes
  - Identification of the current assets that can be utilized by both conventional aviation and space activities can dramatically reduce cost of the creation of space infrastructure and spaceport creation
  - The earlier a potential spaceport identifies the goal of launch licensing , the sooner a spaceport development plan can be created and with that plan the spaceport has greater potential for savings through cooperative multiuse infrastructure planning

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# Case study:

# Spaceport Sheboygan

Proposed :License not applied for

# Spaceport Sheboygan Attributes

- Restricted air space over low population density “safety zone”
- Currently utilized by Coast Guard
- Previously received numerous FAA waivers to launch Super Loki sounding rockets to over 35 miles in altitude during annual Rockets for schools launch event
- Home of Great Lakes Aerospace Science and Education Center an interactive STEM education center witch utilizes space exploration as a catalyst to learn Science,Technonogy,Engineering and Math
- Close proximity to active airport  allowing flight profile similar to space tourism profiles of other spaceports
- Exclusive tourist destination  The American Club at Kohler, already attracting visitors of the Space tourism class
- Close proximity to Oshkosh Wisconsin’s EAA-Experamental Aircraft association and it annual Airventure fly-in
- Wisconsin Aerospace Authority created to support and nurture development ofthe budding space industry in the state

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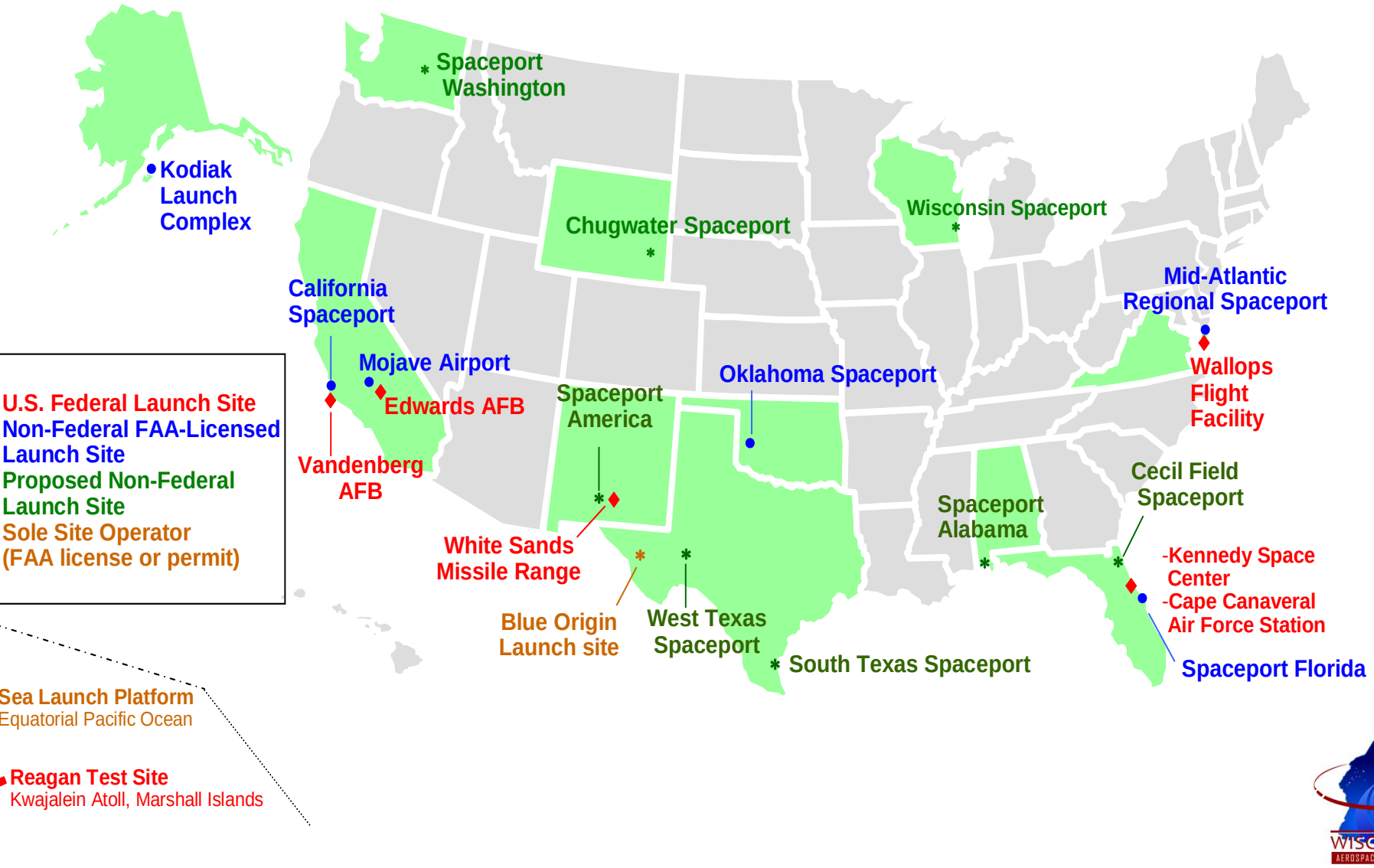
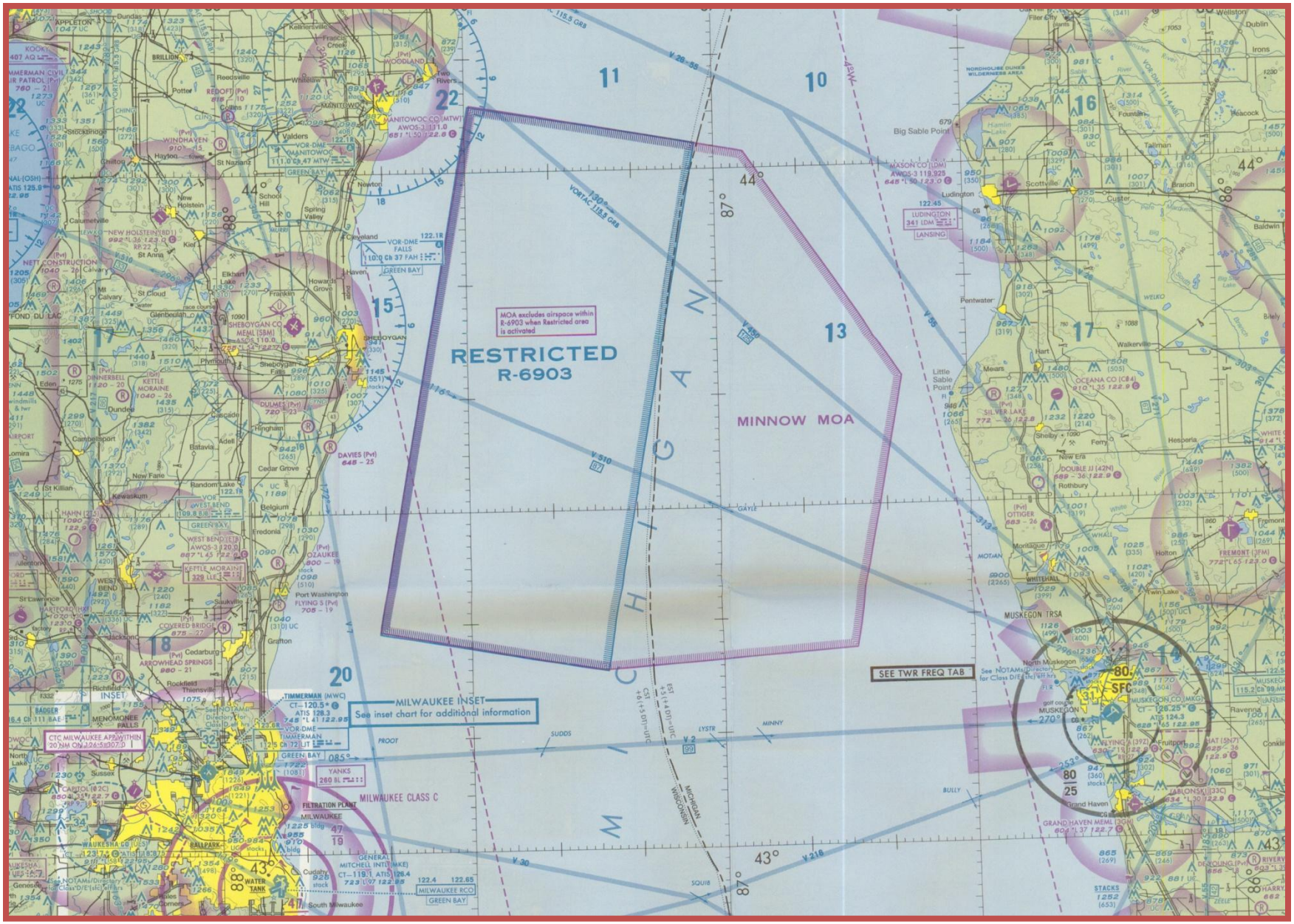
# Commercial SpacePort; Spaceport in Wisconsin would be the only one in the great lakes region

## U.S. Spaceports

### Commercial and Government Active and Proposed Launch Sites



# Restricted air space



# FAA Reference January 09

| State | Non-federal | Federal | Proposed |
|---|---|---|---|
| Alabama | | | x |
| Alaska | x | | |
| California | x | x | |
| Florida | | x | x |
| Kwajalein | | x | |
| New Mexico | x | x | |
| Oklahoma | x | | |
| Texas | x | | x |
| Virginia | x | x | |
| Washington | | | x |
| Wisconsin | | | x |
| Wyoming | | | x |

## Spaceport Sheboygan

On August 29, 2000, the Wisconsin Department of Transportation officially approved creating the Spaceport Sheboygan, located on Lake Michigan in Sheboygan, Wisconsin. The city of Sheboygan owns the spaceport, which strives to support space research and education through suborbital launches for student projects.

| Spaceport Sheboygan | |
|---|---|
| Location | Sheboygan, Wisconsin |
| Owner/Operator | Owner: City of Sheboygan; Operator: Rockets for Schools |
| License Status | Have not applied |
| Description | Spaceport Sheboygan conducts suborbital sounding rocket launches for the purpose of educating students and the general public. |
| Infrastructure | Portable launch pads, equipment, and facilities, including mission control. Proposed for renovation adjacent to the launch pads, the proposed Great Lakes Aerospace Science and Education Center will serve as a hands-on space travel-oriented center focusing on math and science-oriented education and tourism. Plans for developing additional launch infrastructure are ongoing and include creation of a development plan that includes support for additional suborbital and future orbital RLV operations. |

Suborbital sounding rocket launches to altitudes of up to 55 kilometers (34 miles) have been conducted at the site. Additionally, Rockets for Schools, a student program founded in Wisconsin by Space Explorers, Inc., and developed by the Aerospace States Association, has conducted suborbital launches at Spaceport Sheboygan since its inception in 1995. Each year, hundreds of students from Wisconsin, Illinois, Iowa, and Michigan participate in these launches, which took place most recently in May 2008. Currently, Rockets for Schools is a volunteer run program of the Great Lakes Spaceport Education Foundation.

Over 1,500 schoolchildren toured the Great Lakes Aerospace Science and Education Center and 1,000 members of the general public took part in educational sessions, including a teacher education session. Approximately 50 rockets were launched as part of the Rockets for Schools annual event including high power specialty rockets reaching up to 3,048 meters (10,000 feet) altitude. The Wisconsin Aerospace Authority met in late 2008 to discuss updates on the Great Lakes Aerospace Science and Education Center and to identify aerospace industries established throughout Wisconsin.[71]

Rocket launch from Spaceport Sheboygan

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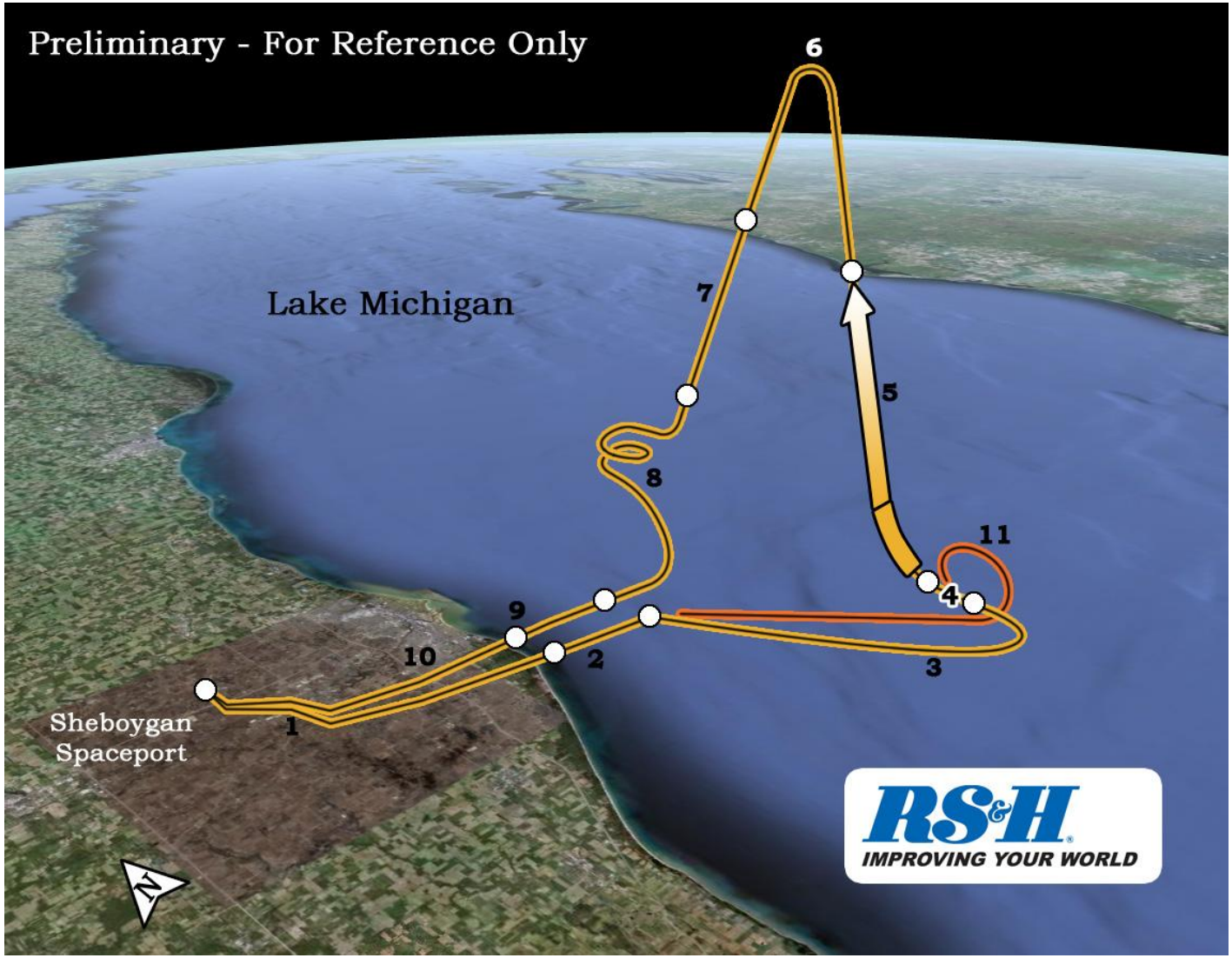
# Sheboygan County Airport

- Less than seven miles from lake Michigan

# Possible flight profile

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# WAA MISSION STATEMENT

The overall mission of the WAA is to promote, stimulate and facilitate aerospace-related educational and economic opportunities, capabilities and activities in our state, including the development of a spaceport in Sheboygan, WI.

The WAA has 3 core elements:

1.) Encourage and support existing and new economic development and job creation in the aerospace-related industry in our state, and create a business environment and climate that lures new aerospace-related development into Wisconsin.

2.) Use aerospace to motivate students in science, math and engineering disciplines with exciting programs and activities from elementary school through post-high school education.

3.) Protect and mature Wisconsin's access to the space corridor by supporting a long-term future spaceport for suborbital and orbital transportation for tourism, commercial and government markets.

# WISCONSIN AEROSPACE AUTHORITY

- The Wisconsin Aerospace Authority (WAA) was created in 2006 by legislation authored by Senator Joe Leibham & Representative Steve Kestell and signed into law by Governor Jim Doyle.

- Provisions in Wisconsin law relating to the WAA may be found in Chapter 114.60.

# WAA BOARD MEMBERS

- Thomas Crabb: A Wisconsin native with engineering and business degrees from the University of Wisconsin – Madison, Tom leads the growth of aerospace technology and product commercialization in Wisconsin as a co-founder of Orbital Technologies Corporation (ORBITEC) and founder of PLANET LLC.

- Mark Hanna: Having lived in the Sheboygan area for 15 years, Mark is serving his second term on Sheboygan's Common Council, where he has served as President. Mark is a co-owners of Maritime Insurance Group and is Vice President of Maritime Financial Group.

- Steve Kestell: Steve serves as the State Representative of the 27th District, which includes parts of Sheboygan County. Representative Kestell co-authored the legislation that created the Wisconsin Aerospace Authority. Steve has served as a local school board member and on the Assembly Committee on Education.

- Mark Lee: With a civil engineering degree from the United States Air Force Academy and a Master's degree in mechanical engineering from the Massachusetts Institute of Technology, Mark has been working in the aerospace industry for over 35 years. As a retired Air Force Colonel and Astronaut with four space shuttle flights and four space walks, Mark is currently the Director of Special Projects at Affiliated Engineers, Inc, as well as a manager for NASA projects.

# WAA Board, continued

- Joe Leibham: Joe is the State Senator of the 9th Senate District, which includes parts of Sheboygan, Manitowoc, Calumet and Fond du Lac Counties. Senator Leibham co-authored the legislation that created the Wisconsin Aerospace Authority. Joe has also been a active supporter and volunteer for the Rockets for Schools program.

- Tom Mullooly: As a partner with Foley & Lardner LLP, Tom is the vice chair of the firm's Energy Industry Team and works on energy and telecommunications matters. Tom has had a long interest in the space industry and has worked in the past to help secure funding for Wisconsin aerospace projects while working for United States Senator Herb Kohl.

- Judy Schieble: In addition to being employed as a high school science teacher, Judy is also extensively involved in the organization of Rockets for Schools in Sheboygan as the Sheboygan County Elementary Rockets for Schools Chairperson. Judy is also a Teacher Liaison for NASA, as well as a Spaceport Sheboygan committee member.

- Ed Wagner: Ed earned a political science degree from the University of Central Florida in Orlando, Florida and grew up in close proximity to the space program. Ed spent most of his career in local government, where he participated in many projects requiring public/private partnerships.

- Aileen Yingst: With a Bachelor's degree in astronomy and physics from Dartmouth College, as well as a Master's and Doctorate degree from Brown University, Aileen currently serves as the Director of NASA's Wisconsin Space Grant Consortium. Aileen served the Galileo mission to Jupiter and its moons, and is also a participating scientist with the Mars Exploration Rovers Spirit and Opportunity.

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# Point to point sub orbital transportation

- Eventually suborbital space flight will evolve to include point to point transportation opportunities
- At sub orbital velocities outside of the friction of the atmosphere the entire world is within a two hour flight
- Spaceports that start as space tourism centers will become regional sub orbital hubs

# Wisconsin is trying to do our part!

- Wisconsin is doing its part to capitalize on the opportunity presented by the restricted air space, to help our nation participate in the next global transportation revolution
- We ask that the committee and subcommittee support approaches, actions, and licensing  process current utilized by the FAA
- We at the Wisconsin Aerospace Authority and Spaceport Sheboygan look forward to engaging in the next steps with the FAA

**“The earth is the cradle of mind, but one cannot forever live in a cradle.”**

**– Konstantin Tsiolkovsky, 1896**